

developed. This derives from the many facets of these segments and the complex operations they represent. As a result, the broadcast segments have been divided into four categories, each with its own set of scenarios and PERT charts. The four categories are:

Transmitter Facilities
Local Stations
Networks
Production/Postproduction Facilities

The transmitter facilities and the local stations are really part of the same entities, but it helps the analysis to consider them separately, with different scenarios for each. The local stations, networks, and production/postproduction operations share the same scenario descriptions, although each has its own implementation of those scenarios.

Three basic scenarios were developed for the transmitter facilities and for the other categories of operations. The transmitter scenarios are:

- Modification of an existing transmitter with possible addition of equipment
- Construction of a new transmitter and antenna, but using the same tower
- Construction of a new transmitter and antenna, with a new tower also required

Of these, modification of an existing transmitter applies to the EDTV systems, in particular ACTV (Sarnoff's Advanced Compatible Television). The two scenarios

requiring new transmitters and antennas apply to any and all HDTV simulcast approaches. This is true for the new digital techniques as well as the analog schemes proposed earlier.

The basic scenarios for the local station, network, and production/postproduction activities (all essentially "studio" operations) are:

- Modification of existing facilities at 4:3 aspect ratio, retaining 525 lines, using new encoders
- Modification of existing facilities at 16:9 aspect ratio, retaining 525 lines, new encoders or component operation
- Rebuild of facility with High Definition equipment

The first of these scenarios was directed toward the Faroudja system and, so, has been removed from consideration. The second uses an upgrade of existing facilities which is appropriate for both ACTV and the simulcast systems with up-conversion of the line rate. It is likely to be used by many broadcasters as an economical entry for simulcast operation. The third is the most expensive route and the one with the greatest impact on studio operations, requiring a total shutdown and replacement.

The general approach taken in all of the scenarios is to divide the conversion process into stages which can be carried out more or less at will, although sequentially. This is true in the studio cases but was

found to be inappropriate for the transmitter conversion. The transmitter has one stage that results in a complete transmission facility for whichever system is under consideration. Anything short of this did not make sense. In the studio cases, the staging was designed to permit quick implementation for a small amount of Advanced Television operation on a daily or weekly basis, followed by an intermediate level of conversion to permit sustaining operations at a moderate level for the long term, leading to complete conversion over a long time as required for the operator's activities.

Recently, IS/WP2 has received input from CBS and PBS (see Attachments B and C) on studies conducted by those organizations looking toward their implementation of Advanced Television. Both studies included a different approach to the local station transition from that which had been devised by IS/WP2. The Working Party studied the CBS and PBS inputs and then modified the local station scenario (see Attachment D) to take into account some new thoughts contained in the studies. These were primarily a phasing of the implementation into five or six steps (six for CBS which included Electronic News Gathering while PBS did not), thereby allowing a longer implementation period with more decision points about continuation. In either case, the first stage involves passing through the network signal with no local material inserted other than station identification.

B. Surveys

One of the important techniques used by IS/WP2 to develop information concerning an eventual transition to Advanced Television is that of conducting surveys of various parties. One of the first surveys conducted by

the Working Party was to ascertain from television station chief engineers their expectations regarding the availability of space on their towers for additional antennas and transmission lines. While the results were more qualitatively than quantitatively valuable, they pointed to the need for further examination of the problems which will have to be overcome. A consequence of this was the establishment of Local Area Groups, which are explained in detail below.

Because of the need to determine the likely limitations on personnel resources (discussed below under Issues), a new telephone survey of a smaller group of stations has been devised. It will examine the human resources available to stations both internally and externally. In order to validate the survey, a very small sample has just been completed to make sure that the questionnaire (see Attachment E) develops answers for the pertinent questions. The full survey will be conducted shortly by a consultant hired for the purpose. The cost of conducting the survey is being split among four companies whose employees participate in IS/WP2.

A concern raised at the Implementation Subcommittee about the information to be obtained from the survey of stations was that it would not create a complete picture of the situation. This is because much of the human resource which might be available to stations to make a conversion to Advanced Television might be provided from the group owners in one way or another. (See Issues below.) To test this matter, a corollary survey has been developed for group owners. (See Attachment F.) This survey, to be conducted by mail, will be sent out very soon.

C. Local Area Groups

As mentioned above, the first survey of television stations turned up the fact that some stations will face considerable obstacles to their installation of new antennas and transmission lines for simulcast broadcasting. Two surveys conducted at about the same time yielded differing numerical results about the proportion of stations which will be so affected. But there was no question that some number will have problems getting on the air from their existing towers.

To gauge the impact on the conversion to Advanced Television of such limitations in the ability to install simulcast transmission facilities, a decision was made to examine the situation in a few of the larger markets where problems are likely to occur. The larger markets were deemed to be the most important for initial examination since the largest populations would be impacted if there were a lack of Advanced Television service and since the large markets are the ones most likely to have difficulties with fully loaded towers, limitations in the number of sites for towers, locally defined radiation limits, and the like.

The technique formulated for the study was the establishment of Local Area Groups in each of five cities to explore the implementation of simulcast transmission there. The cities selected for the first round of study are:

New York
Los Angeles
Chicago
San Francisco
Boston

The Local Area Groups are comprised of the chief engineers of all of the television stations in the environs of the city. One individual in each market has agreed to be the facilitator of the discussions to be held. The groups will meet to examine their current situations, looking at how much tower space is available in what locations. They will then explore possibilities for the addition of the antennas and transmission lines that will be required to support simulcast broadcasting. IS/WP2 provided instructions to the Local Area Groups to direct their activities, which are Attachment G.

So far, four of the Local Area Groups have held meetings. A couple of them have achieved good results, while the other two suffered from poor attendance as a result of the Persian Gulf conflict. The level of discussion and study in the groups has been exactly what was sought. (See Attachment H for an example of an early report from one group.) All indications are that IS/WP2 will gain the knowledge it wanted when it established the process. Results of the Local Area Group meetings will be used to guide the activities of the Working Party over the next year or so in its consideration of transmitter implementation.

D. Issues

1. Resource Limitations

Probably the most significant issue that has turned up in the preparation of the PERT charts to date is the previously undocumented assumption that adequate resources will be available at the television stations and other participants in Advanced Television to make the necessary

conversions of facilities. There are two kinds of resources which have a bearing on how quickly implementation can take place: personnel and capital.

The limitation on personnel availability stems from the fact that stations, in general, and networks and production houses as well, do not have large numbers of design engineers on their staffs. The conversion to High Definition operation will require the complete redesign and reconstruction of major portions of facilities. While the personnel to do the installation work can be hired from outside fairly easily, designers with the skills and experience to fashion new operations are relatively few within the industry. Certainly, most stations are not expected to have people with such skills waiting to be called upon. The surveys of stations and group owners discussed above are designed to explore this hypothesis and to seek ways that the problem, if it exists, can be overcome.

Examples of the kinds of approaches to be explored with the stations and groups are whether skilled designers can be provided from the group level to the stations, whether such personnel can be reassigned from one station which has such resources to others which do not, whether the implementation of stations should be staggered to accommodate these limitations, and whether outside consultants and vendor support are available to get the job done and to what extent.

A related limitation is the availability of capital to make the transition possible. With the incomes of stations and networks shrinking, in the aggregate, consideration must be given to the pace at which conversions can take place. If the owners of the stations

are unwilling or unable to make investments beyond certain levels, the implications for the speed of implementation are considerable. These effects are being explored in the survey of group owners.

2. Digital Systems

Another issue that has only just been identified and not yet explored is the matter of the use of digital systems for simulcast broadcasting. It is unclear what impact, if any at all, this might have on the implementation of Advanced Television. It is an issue which must be taken up with the proponents. The meetings planned with the proponents, as discussed below under Future Work will provide the vehicle for appropriate discussions with the proponents.

E. Future Work

Work is planned in the near future on all of the aspects of the committee's activities that are not yet complete.

The surveys of the stations and of the group owners to explore potential resource limitations are expected to be completed within the next several months.

Analysis of the surveys will take place during the second and third quarters with the results fed back into the timing used in the PERT networks and resulting timelines.

The Local Area Groups are expected to complete their initial round of discussions in the second quarter. Depending upon the problems they identify and the solu-

tions they devise, IS/WP2 may modify its implementation plans or may make recommendations to the Implementation Subcommittee and through it to the Advisory Committee of specific items which should be included in its report to the FCC. These items would be suggestions for ways the rules should be written, or other such considerations, which would enhance the ability of stations to implement Advanced Television at an early date.

Meetings are planned in the near future with the proponents to gain their inputs and insights into how their specific systems will be implemented. A series of meetings is planned, the first of which will be a joint meeting with all of the proponents in which the PERT charts will be explained in detail. Then, meetings will be held separately with each proponent to learn of its comments on how the PERT networks would apply to its particular system or systems. Preparations for these meetings is currently beginning. They are expected to be completed in the second quarter of 1991.

Following the meetings with proponents, system-specific PERT networks will be developed. These will be used to point out to the Advisory Committee and its constituent subgroups any differences in implementation schedules or requirements which might exist between the several proposed systems. They will also be used to have available implementation plans tailored to whichever of the systems is eventually selected for Advanced Television broadcasting in the United States. This work is not expected to be complete until the first or second quarter of 1992.

The IS/WP2 report is included as Attachment I; the Implementation Subcommittee Leadership List and Document Index are Attachments J and K, respectively.

List of Attachments

- Attachment A IS/WP1-0023 "IS/WP-1 Report on Spectrum Assignment Options," July 24, 1990
- Attachment B CBS Study "High Definition Television Transition Scenario for TV Stations: A CBS Work-In-Progress," Engineering & Development Department, CBS/Broadcast Group, Preliminary Results, October 23, 1990
- Attachment C PBS Study "High Definition Television," PBS Engineering, Preliminary HDTV Estimates, October 1990
- Attachment D Local Station PERT Chart "Full HDTV Replacement - Scenario 3," 1-29-91
- Attachment E Questionnaire for Television Stations, Revision 3.4: 12/19/90
- Attachment F Questionnaire for Group Owners, Revision 4.1: 12/19/90
- Attachment G Instructions to Local Area Groups, November 26, 1990
- Attachment H Report Draft from New York Local Area Group "Discussion of Advanced Television Transmission Implications," TV All Industry Committee, January 31, 1991
- Attachment I IS/WP2 Third Interim Report to the Implementation Subcommittee, February 27, 1991
- Attachment J Implementation Subcommittee Leadership, Revision: 3/7/91
- Attachment K IS-0001, Document Index, 7 March 1991

7/24/90

IS/WP1-0023

**IS/WP-1 REPORT ON
SPECTRUM ASSIGNMENT OPTIONS**

I. INTRODUCTION.

This report examines alternative methods of assigning supplemental spectrum for advanced television (ATV) broadcasts if not all existing broadcasters could be assigned an optimum amount of additional spectrum capacity for HDTV. Options explored are those discussed in the FCC's September 1988 Further Notice: "A) some type of comparative process; B) lotteries; C) auctions; D) assigning capacity to all licensees uniformly and allow stations to acquire additional capacity needed from others." Because, as explained below, the ultimate suitability of specific assignment options in the ATV context largely depends upon critical facts that have yet to be determined, the Working Party has attempted to limit itself to a neutral discussion of the pros and cons of these options. The Working Party believes that at this time recommendation of a specific option would be premature and intends to revisit these issues when computer studies and the system testing process reveal the extent to which existing licensees can be accommodated with additional spectrum assignments.

In responding to these questions, the Working Party has made certain assumptions and identified certain conditions that affect how specifically its answers can be framed at this time. First, as specified in the question put to the Working

Party, this discussion assumes that there will not be sufficient spectrum to satisfy the ATV needs of all existing broadcast stations and unlicensed allotments.^{1/}

Second, holding other conditions constant, the amount of spectrum (that is, ATV channels) available nationally is inversely related to the coverage area of the ATV stations. Most discussion about spectrum availability for high definition television assumes that ATV coverage areas must be the same size (or very nearly so) as NTSC coverage areas.^{2/} Technical differences between proponent systems may yield ATV coverage areas that differ substantially and have different effects on present NTSC service, differences that will only be revealed by laboratory and field testing. Moreover, if the requirement for equal NTSC/ATV coverage areas were relaxed and the possibility of smaller-than-NTSC ATV coverage areas were entertained, it might be possible that all existing broadcasters could receive additional spectrum for ATV, regardless of the choice of ATV system.

This trade-off between ATV coverage areas and the number of existing stations which can be granted additional spectrum raises potentially troublesome public policy issues.

^{1/} We note, however, that it is claimed that several proponent ATV systems could in theory accommodate all current stations and allotments in the existing VHF and UHF bands.

^{2/} It also has been generally assumed that ATV will not degrade or diminish present NTSC coverage areas.

In addition to assessing the options discussed below, the Commission should consider whether smaller-than-NTSC ATV coverage areas would alleviate any ATV spectrum shortage and, if so, whether any degree of such reductions would be of an acceptable magnitude. Furthermore, we concur with the Commission's tentative conclusion that degradation to present NTSC service would not be in the public interest and question also whether smaller-than-NTSC ATV coverage areas would be in the public interest.

Third, it is important to recognize that a scarcity of ATV spectrum raises both allotment questions (which city or territory should get the ATV channel?) and assignment questions (which licensee in a particular city should get the channel?) Though interrelated, these processes can be segregated and resolved by different mechanisms. For example, the Commission could choose to adopt a national table of allotments in which specific ATV channels are allotted to specific cities (but not linked to a specific channel within those cities) and then to distribute the licenses by means of comparative proceedings, lotteries, or auctions.

It should be understood, however, that the development of any national table of allotments (other than one developed on a random basis) requires some comparison of relevant factors. The spectrum availability studies undertaken by PS/WP-3 and OET, which are highly simplified models the Commission might use to make an actual allotment

plan, use algorithms that are in essence rules for deciding in what order to satisfy a list of requirements. Because an allotment algorithm cannot be neutral, comparative criteria incorporating desired public policy and public interest considerations must be used to create the algorithm.

Fourth, the specificity of the allotment process will determine the complexity of the assignment process. A demand approach, under which an applicant identifies usable spectrum and applies for it, would move all comparative decisions into the assignment process.^{3/} Conversely, the creation of a definitive national table of allotments, matching particular ATV spectrum blocks with existing NTSC allotments, would move all the hard decisions to the allotment process. Where additional spectrum in a particular market is not equally usable by all existing NTSC allotments, handling these considerations at the allotment level may prove to be more administratively efficient.

Fifth, scarcity may be a function not of the total amount of spectrum available but of the type or location of the available spectrum. Thus, for example, even if the FCC allots a sufficient number of ATV channels to provide one for each NTSC broadcast station, there still may not be enough VHF

^{3/} Advanced Television Systems and Their Impact on the Existing Television Broadcast Service (Tentative Decision and Further Notice of Inquiry), MM Dkt. No. 87-268, 3 F.C.C. Rcd. 6520, 6538-39 (1988).

channels to provide one for each VHF station.^{4/} Similarly, some of the ATV channels may be allotted to particular communities with less desirable site restrictions or power and height limitations.^{5/}

Sixth, scarcity also may be analyzed as a function of time. It may be possible, for example, for the Commission to accommodate all stations by using staggered assignments of ATV frequencies in such a way that all demand for spectrum ultimately could be satisfied, although not at once. Such a system might be implemented if, for example, ATV were to take the form of a 6 MHz stand-alone or "simulcast" channel. The Commission could permit some broadcasters to use additional spectrum for ATV purposes immediately, while others converted at a later date, when ATV set penetration reached such levels that simulcasting was no longer necessary. At that time, broadcasters who had not received supplemental spectrum simply could start to use that spectrum previously used for NTSC broadcasts for ATV broadcasts. If the Commission were to adopt a staggered assignment approach, it would have to decide

^{4/} Under this scenario, in a simulcast ATV scenario, broadcasters might wish to switch their own NTSC and ATV channel assignments, so as to maximize the technical and other advantages of each channel as they see fit.

^{5/} We note that there currently are several hundred secondary users of the television spectrum, many, if not most, of whom would be displaced by ATV. While these users have no legal claim to remain in those bands, they may be expected to seek other accommodation from the Commission.

the threshold question of whether broadcasters receiving supplemental spectrum would have to relinquish one of the channels after simulcasting for a specified period. A staggered assignment approach might not be a viable option if, as in the British conversion to UHF, stations are required to simulcast for as long as 19 years.

Seventh, for broadcasters, the choice of an ATV standard and system is inseparable from the allotment and assignment process. To permit broadcasters to enter the ATV market as quickly as possible, and at the same time as other media which could or will employ that same standard or system, the Commission should, to the greatest extent possible, make the necessary allotment and assignment determinations at the same time it chooses the standard/system.

II. LEGAL CONSIDERATIONS.

A. Statutory Framework.

In addition to the various assumptions and conditions previously described, the discussion contained in this report must take as its point of departure the current statutory framework that guides the Commission's decisions on spectrum allotment and assignment issues. Apportionment methods that might contravene this framework are susceptible to the delays and costs entailed by legal challenge, may be disallowed altogether, or may require statutory amendments for their implementation.

The statutory basis for the Commission's authority to act in this area is the Communications Act, which directs the Commission to issue station licenses "if public convenience, interest, or necessity will be served thereby" 47 U.S.C. § 307(a). Upon receiving an application for a license, the Commission must determine whether the "public interest, convenience, and necessity would be served by the granting thereof" after an "examination of such application and upon consideration of such other matters as the Commission may officially notice." 47 U.S.C. § 309(a). And, for the modification of licenses, the Commission is required to make a judgment that "such action will promote the public interest, convenience, and necessity, or the provisions of [the Act]" 47 U.S.C. § 316(a).

Clearly, then, the Communications Act appears at a minimum to require that the Commission exercise some judgment in the assignment of spectrum and that such judgment be exercised in accordance with the prescribed standards of the public interest, convenience, and necessity. Therefore, it is questionable whether, under the present statutory scheme, "marketplace" methods of apportionment of spectrum would improperly delegate this evaluation to private parties. Furthermore, although there now exists statutory authority for the assignment of spectrum by lottery, 47 U.S.C. § 309(i), the use of this method for the assignment of supplemental ATV spectrum may not be permissible. Moreover, Section 309(i)

carries with it the requirement of certain minority and diversity preferences, which may not be applicable in the ATV context.

In short, the discussion of apportionment options in Section III should be recognized as a catalogue of competing concerns with regard to each rather than a detailed analysis of their legal feasibility or advisability. However otherwise desirable, a spectrum assignment method requiring legislation for its implementation raises additional issues that may render it of far less value.

B. Non-commercial Assignments.

Initially, we wish to flag an assignment issue that traditionally has been addressed separately by the Commission. The Commission must consider how to accommodate its established policies toward non-commercial educational television service in its decisions regarding ATV spectrum.^{6/} As the Commission has announced the tentative goal of making ATV spectrum assignments within the existing broadcast framework, this paper assumes that the current reservations policy will be maintained and extended to provide for the availability of

^{6/} Broadcasting Act of 1967, Pub. L. No. 90-129, 81 Stat. 365 (1967); S. Rep. No. 222, 90th Cong. & Admin. News 1772. See also Public Telecommunications Financing Act of 1988, H.R. Rep. No. 825, 100th Cong., 2d Sess. 14 (July 5, 1988).

ATV spectrum for non-commercial use.^{7/} Even if technical constraints make it infeasible to reserve specific allotted channels in each community for non-commercial ATV in the way that NTSC channels are reserved, the unique situation of non-commercial stations nevertheless must be addressed, in some manner.

The Commission has traditionally relied on reservations of channels for non-commercial use as the primary means of assuring that viewers throughout the nation have access to non-commercial television service.^{8/} On account of

^{7/} Public broadcasting participants in the Working Party note that the current reservation policy was established to protect the federal interest in the availability of public television service of the highest technical quality to the entire nation. This policy has been in place since the Sixth Report and Order, 41 F.C.C. 148, 158-64 (1952), first established reservations in the Table of Allotments and has been adhered to since that time -- both by assuring cable television carriage of non-commercial stations and by denying requests to remove reservations to allow the establishment of new commercial stations.

^{8/} In the Sixth Report and Order, the Commission reserved 242 channels across the country, in both the VHF and UHF bands, for non-commercial use and has protected the reservations against commercial incursions. See Television Channel Assignments at Nashville, Tennessee, 26 R.R.2d 1667 (1973); TV Channel Assignment at Ogden, Utah, 45 R.R.2d 768 (1979). See also Amendment of Part 76 of the Commission's Rules Concerning Carriage of Broadcast Signals By Cable Television Systems, 1 F.C.C. Rcd. 864 (1986), rev'd, Century Communications Corp. v. FCC, 835 F.2d 292 (D.C. Cir. 1987), cert. denied, 108 S. Ct. 2014 (1988) (Commission concluded that FCC and Congressional policy fostering non-commercial television service required the adoption of interim must-carry rules containing special provisions designed to assure cable subscriber access to non-commercial service, which policy judgment was not challenged by the Court of Appeals).

their differential access to capital markets, many non-commercial licensees require more time to construct and place new facilities into operation than do their commercial counterparts; thus, the assurance that reserved channels will be available for non-commercial licensees is intended to make it easier for non-commercial applicants to raise funds and obtain other support for their proposed facilities.^{9/} The reservations policy has also been approved by Congress.^{10/}

Certain techniques that might be desirable for allotting and assigning ATV spectrum to commercial stations would be unsuitable for non-commercial broadcasting because of the different economic considerations applicable to those stations. As noted above, non-commercial stations often require more time than commercial stations to construct facilities. It also would be inappropriate to require non-commercial stations to compete financially against commercial applicants or against one another for spectrum.

If the Commission does not extend its reservations policy for non-commercial to ATV spectrum, these issues relating to the apportionment of ATV spectrum for

9/ Sixth Report and Order, 41 FCC at 159, 161.

10/ Educational Television, S. Rep. No. 67, reprinted in 1962 U.S. Code Cong. & Admin. News 1614; Hearings on S. 12 Before the Senate Committee on Interstate and Foreign Commerce, 86th Cong., 1st Sess. 21, 61 (1959); Hearings Before the Senate Committee on Interstate and Foreign Commerce, 83rd Cong. 1st Sess. 12-14, 26, 45-46, 56-57 (1953)

non-commercial television use would be relevant to the analysis of each of the options discussed below and should be considered in evaluating the merits of each option and in determining how it should be implemented.

III. OPTIONS

A. Comparative Process.

1. Advantages of Assigning ATV Supplemental Spectrum By Comparative Criteria.

Criteria for choosing among qualified applicants, whether applied by the Commission staff or incorporated into a computer algorithm, could be designed to advance certain specified public interest objectives, if such objectives could be identified and agreed upon in the ATV context. The criteria that would go into this "value function" might include factors pertaining to the technical suitability of the particular spectrum for the particular station -- such as the current transmitter location, current channel assignment, terrain, site availability, number of households in the current signal coverage area, audience size, population patterns, and relevant interference and spacing considerations. (Some of these considerations might be addressed beforehand in the allotment process.) Another factor might be a commitment to commence broadcasting in ATV within a specified period of time. For this evaluation to be meaningful, the Commission would have to retain the right to hold the buyer of a station with ATV capability to the promises of the

seller. (Alternatively, rather than being a comparative factor, this commitment to commence timely service might constitute one of the threshold qualifications for a party to participate in the assignment process.)

It would be difficult to develop comparative criteria suitable for both public and commercial television. Because the Commission's current policies recognize the likelihood that non-commercial applicants will need more time to initiate services, it would, for example, be inconsistent to require non-commercial applicants to use ATV spectrum within a given time frame. Such a requirement might, however, be reasonable for commercial stations.

2. Disadvantages Of Assigning ATV Supplemental Spectrum By Comparative Criteria.

The disadvantages of assigning spectrum by comparative criteria have been well-recognized. Comparative proceedings require regulators to agree upon, and then neutrally apply, criteria for deciding whether a prospective licensee deserves a license. The subjectivity of this process (and the risk that it will deviate from the rule of law) has been criticized by judges, former FCC commissioners, and legal scholars since at least the early 1960s.^{11/}

^{11/} H. Friendly, The Federal Administrative Agencies 63 (1962); Johnson & Dystel, A Day in the Life: The Federal Communications Commission, 82 Yale L.J. 1572 (1973); Spitzer, (footnote cont'd)

Comparative proceedings are expensive for both the FCC and the potential licensees. Moreover, their slowness delays the benefits to the public that are to be derived from the development of unused portions of the spectrum. When the government licenses a scarce resource through an administrative process, private groups typically expend large amounts attempting to secure the resource. The expense and delay make comparative processes ripe for opportunistic behavior, not only by bona fide competing applicants, but also by third parties interested in extracting from prospective licensees part of the economic value of the license to be granted.

The Commission has recognized these problems in its numerous recent discussions of comparative licensing^{12/} and renewal procedures, and abuse of those processes. The expense of full-scale comparative proceedings might particularly burden non-commercial entities, which have limited financial resources and are largely dependent upon voluntary contributions and government appropriations.

(footnote cont'd)

Multicriteria Choice Processes: An Application of Public Choice Theory to Bakke, the FCC, and the Courts, 88 Yale L.J. 717, 746 (1979).

12/ See Formulation of Policies and Rules Relating to Broadcast Renewal Applicants, Competing Applicants, and Other Participants to the Comparative Renewal Process and to the Prevention of Abuses of the Renewal Process (Second Further Notice of Inquiry and Notice of Proposed Rule Making), BC Dkt. No. 81-742, 3 F.C.C. Rcd. 5179 (1989).